

- (b) Be protected from excessive heat;
- (c) Be prevented from falling;
- (d) Be tested after any repair, modification, or alteration to the pressure boundaries as set forth in § 197.462; and
- (e) Meet the requirements of—
 - (1) Part 54 of this chapter; or
 - (2) 49 CFR 173.34 and 49 CFR part 178, subpart C.

§ 197.340 Breathing gas supply.

- (a) A primary breathing gas supply for surface-supplied diving must be sufficient to support the following for the duration of the planned dive:
 - (1) The diver.
 - (2) The standby diver.
 - (3) The decompression chamber, when required by § 197.432(e)(2) or by § 197.434(a) for the duration of the dive and for one hour after completion of the planned dive.
 - (4) A decompression chamber when provided but not required by this subpart.
 - (5) A closed bell when provided or required by § 197.434(d).
 - (6) An open bell when provided or required by § 197.432(e)(4) or by § 197.434(c).
- (b) A secondary breathing gas supply for surface-supplied diving must be sufficient to support the following:
 - (1) The diver while returning to the surface.
 - (2) The diver during decompression.
 - (3) The standby diver.
 - (4) The decompression chamber when required by § 197.432(e)(2) or by § 197.434(a) for the duration of the dive and one hour after the completion of the planned dive.
 - (5) The closed bell while returning the diver to the surface.
 - (6) The open bell while returning the diver to the surface.
- (c) A diver-carried reserve breathing gas supply for surface-supplied diving must be sufficient to allow the diver to—
 - (1) Reach the surface.
 - (2) Reach another source of breathing gas; or
 - (3) Be reached by a standby diver equipped with another source of breathing gas for the diver.
- (d) A primary breathing gas supply for SCUBA diving must be sufficient to support the diver for the duration of the planned dive through his return to

the dive location or planned pick-up point.

- (e) A diver-carried reserve breathing gas supply for SCUBA diving must be sufficient to allow the diver to return to the dive location or planned pick-up point from the greatest depth of the planned dive.

(f) Oxygen used for breathing mixtures must—

- (1) Meet the requirements of Federal Specification BB-0-925a; and
- (2) Be type 1 (gaseous) grade A or B.
- (g) Nitrogen used for breathing mixtures must—
 - (1) Meet the requirements of Federal Specification BB-N-411c;
 - (2) Be type 1 (gaseous);
 - (3) Be class 1 (oil free); and
 - (4) Be grade A, B, or C.

(h) Helium used for breathing mixtures must be grades A, B, or C produced by the Federal Government, or equivalent.

(i) Compressed air used for breathing mixtures must—

- (1) Be 20 to 22 percent oxygen by volume;
- (2) Have no objectionable odor; and
- (3) Have no more than—
 - (i) 1,000 parts per million of carbon dioxide;
 - (ii) 20 parts per million carbon monoxide;
 - (iii) 5 milligrams per cubic meter of solid and liquid particulates including oil; and
 - (iv) 25 parts per million of hydrocarbons (includes methane and all other hydrocarbons expressed as methane).

§ 197.342 Buoyancy-changing devices.

(a) A dry suit or other buoyancy-changing device not directly connected to the exhaust valve of the helmet or mask must have an independent exhaust valve.

(b) When used for SCUBA diving, a buoyancy-changing device must have an inflation source separate from the breathing gas supply.

§ 197.344 Inflatable floatation devices.

An inflatable floatation device for SCUBA diving must—

- (a) Be capable of maintaining the diver at the surface in a faceup position;